

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 2-05				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-D-11-006			Contract Period 04/29/2011 To 03/28/2013			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Estimating Emissions				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW B					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 03/29/2012 To 03/28/2013					
Comments: This work assignment includes 100 hours for preparation of the work plan and to begin work on the work assignment. To the best of my knowledge, this work does not duplicate any work previously performed or currently being performed by this office.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE: 0				
04/29/2011 To 03/28/2013										
This Action:						100				
Total:						100				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:		LOE:				
Cumulative Approved:				Cost/Fee:		LOE:				
Work Assignment Manager Name Roy Huntley						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number 919-541-1060				
						FAX Number: 919-541-0684				
Project Officer Name Margaret Dougherty						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 919-541-2344				
						FAX Number:				
Other Agency Official Name						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number:				
						FAX Number:				
Contracting Official Name Rodney-Daryl Jones						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 919-541-3112				
						FAX Number:				

Statement of Work

I. Title: Estimating Emissions from the Oil and Gas Production Sector
Contractor Name: ERG
Contract #: EPD11006
WA #: 2-05

II. Work Assignment Manager (WAM):
Roy Huntley
Emission Inventory and Analysis Group (C339-02)
Emissions Monitoring and Analysis Division
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711
Phone: (919) 541-1060

Lee Tooly (alternate)
Emission Inventory and Analysis Group (C339-02)
Emissions Monitoring and Analysis Division
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711
Phone: (919) 541-5292

III. Background:

The Emission Inventory and Analysis Group (EIAG) produces the National Emission Inventory (NEI), for criteria and hazardous air pollutants (HAPS) for various years. These data are needed by States to evaluate emissions trends in each State and to compare emission trends between States. The NEI is also used as a basis for various EPA modeling and regulatory analyses. Finally, the NEI contains the data used to produce the National Air Pollutant Emission Trends report.

The purpose of this work assignment is to produce a nonpoint emission inventory for the oil and gas production sector the calendar year 2011. (The term “nonpoint” is used to include what has been traditionally called “area” sources in the criteria inventories. For hazardous air pollutants (HAPS), “area sources” has a statutory meaning related to how a source is regulated. Therefore we use the term “nonpoint” to include stationary sources that do not have a known latitude/longitude location).

IV. Description and Tasks:

Task 1 – Work Plan and Project Management

The Contractor shall prepare a Work Plan, Cost Estimate, and monthly progress reports in accordance with the terms and conditions of the contract.

Task 2 - Development of a Nonpoint Oil and Gas Production Sector Emission Estimation Tool

The Contractor shall develop a nonpoint methodology to estimate county-level emissions for calendar year 2011 for all pollutants (criteria, HAPs, GHG, and ammonia) for the oil and gas production sector. This national methodology will be used by EPA to estimate default emissions for field exploration, production, and gathering activities. The methodology shall be designed as a calculational tool so that it can be used by states and EPA to estimate emissions for future years with a change in inputs to the tool. The tool shall consider all significant sources of emissions, including but not limited to:

- drill rigs,
- workover rigs,
- well completions (flaring/venting for both conventional and green completions),
- well hydraulic fracturing and completion engines,
- heaters (separator, line, tank, reboilers)
- storage tanks (condensate, black oil, produced water),
- Dehydration units
- Pneumatics (pumps, all other devices)
- Well venting/blow downs
- Fugitives
- Truck loading
- Wellhead engines
- Pipeline compressor engines
- Flaring

The methodology shall not rely on new industry surveys or other work-intensive techniques and shall be relatively easy to develop and update using state and/or national public databases of production and/or consumption. Where practical, the tool shall take into account regional differences such as oil and gas production, gas composition, engine populations, and emissions controls/practices mandated by state or local agencies. Existing references to be considered include, but not be limited to:

- Work products from the WRAP Oil & Gas Emissions Workgroup; Phase III Oil & Gas Emission Inventory (<http://www.wrapair2.org/PhaseIII.aspx>), and Analysis of States' & EPA Oil and Gas Air Emission Control Requirements for Selected Basins in the Western U.S. (<http://www.wrapair2.org/Analysis.aspx>); Western Regional Air Partnership and Western Energy Alliance; 2007 to present
- Calculational spreadsheets from Texas, file names = "Appendix D - Compressor Engine Calculation Workbook.xls", "Appendix E - Texas Oil and Gas Emissions Inventory.xls", (WAM shall provide)
- Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements, Al Armendariz, Ph.D, Department of Environmental and Civil Engineering, Southern Methodist University, P.O. Box 750340, Dallas, Texas, 75275-0340, January 26, 2009 (WAM shall provide)
- Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions, FINAL REPORT, Prepared by: Mike Pring, Daryl Hudson, Jason Renzaglia, Brandon Smith, and Stephen Treimel, Eastern Research Group, Inc., November 24, 2010 (WAM shall provide)

- Preferred And Alternative Methods For Estimating Air Emissions From Oil And Gas Field Production And Processing Operations, EIIP, September 1999, <http://www.epa.gov/ttn/chief/eiip/techreport/volume02/ii10.pdf>
- “Oil and Gas Exploration and Production Greenhouse Gas Protocol Task 2 Report on Significant Source Categories and Technical Review of Estimation Methodologies - Final Report (http://www.wrapair.org/ClimateChange/GHGProtocol/docs/WRAP_GHG_Task2_FINAL_042210.s.pdf).
- National Oil and gas States activity survey – January 2012 (available from the Mid Atlantic Regional Air Management Association (MARAMA)).

The Contractor shall build into the tool the capability to estimate future year emissions, up to 20 years beyond the base year. As part of this task, the Contractor shall evaluate and recommend the best methodology of doing emission projections. The recommendations shall include an evaluation of source activity data from the following (but is not limited to):

- the Energy Information Administration’s Annual Energy Outlook,
- the Interstate Oil and Gas Compact Commission (<http://iogcc.publishpath.com/links>) ,
- IHS Global - US Well Data (<http://www.ihs.com/products/oil-gas-information/well-data/us.aspx>),
- the Mobile Source Inventory Piceance Pilot Project (<http://www.wrapair2.org/Mobile.aspx>)

The Contractor shall also develop a users guide that describes how to use the tool. The user guide shall include guidance on point source subtraction for this sector

Task 3 - Documentation

The Contractor shall provide written descriptions of the methodology, including the basis for each data field and steps to revise the tool inputs for base years or future years. The written material shall contain descriptions and references for all applicable tool inputs, including but not limited to, emission factors, gas composition, engine population profiles, and allocation schemes.

V. QA Requirements:

The contractor shall provide a written QA project plan as part of the WA. The Contractor shall also evaluate the nonpoint estimates in terms of reasonableness. The contractor shall propose other reasonableness checks for WA approval. Reasonableness checks may include review of outliers and comparing 2011 estimates to previous year’s estimates or to other comparable estimates. The contractor shall deliver QA reports to the WAM.

VI. Deliverables:

The Contractor shall adhere to the following schedule:

Deliverable	Due Date
Work Plan	20 calendar days after the effective date of the work assignment
Monthly progress reports	Ongoing
Draft Plan for Tool Development	May 15, 2012
WAM Approval of Plan	June 30, 2012

2011 draft Oil&Gas EI	September 30, 2012
Final Oil and Gas EI	December 31, 2012
Deliver final documentation	March 31, 2013

VII. Reporting Requirements:

The Contractor shall provide monthly progress reports in accordance with the terms of the contract. The Contractor shall submit work products in electronic as well as hard copy form. In addition, the Contractor shall deliver to the WAM each draft and final report in electronic format that is readable by windows-based word-processing (Microsoft Word 2007), graphics (Microsoft PowerPoint 2007), spreadsheet (Excel 2007), and database (Access 2007) programs.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 2-05				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-D-11-006			Contract Period 04/29/2011 To 03/28/2013			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Estimating Emissions				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 03/29/2012 To 03/28/2013					
Comments: The work plan dated 05/04/12 has been reviewed and we concur with the labor mix, technical hours (1001), ODCs, total estimated cost \$89,980 and completion date 03/29/13 as specified. Due to budgetary constraints the contractor shall not exceed costs of \$35,000 until authorized by a change in the WA. This document is IAW the CMM 7.3.5.1(D)										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE: 100				
04/29/2011 To 03/28/2013										
This Action:						901				
Total:						1,001				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:		LOE:				
Cumulative Approved:				Cost/Fee:		LOE:				
Work Assignment Manager Name Roy Huntley						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number 919-541-1060				
						FAX Number: 919-541-0684				
Project Officer Name Margaret Dougherty						Branch/Mail Code:				
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						FAX Number:				
Contracting Official Name Rodney-Daryl Jones						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 919-541-3112				
						FAX Number:				

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 2-05				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000002				
Contract Number EP-D-11-006			Contract Period 04/29/2011 To 03/28/2013			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Estimating Emissions from O&G				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 03/29/2012 To 03/28/2013					
Comments: The purpose of this WA is to cancel the budget ceiling.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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04/29/2011 To 03/28/2013										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee:			LOE:			
Cumulative Approved:				Cost/Fee:			LOE:			
Work Assignment Manager Name Roy Huntley							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number 919-541-1060			
							FAX Number: 919-541-0684			
Project Officer Name Margaret Dougherty							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 919-541-2344			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Rodney-Daryl Jones							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 919-541-3112			
							FAX Number:			

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 2-05				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000003				
Contract Number EP-D-11-006			Contract Period 04/29/2011 To 03/31/2014 Base <input checked="" type="checkbox"/> Option Period Number			Title of Work Assignment/SF Site Name				
Contractor EASTERN RESEARCH GROUP, INC.					Specify Section and paragraph of Contract SOW					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 03/29/2012 To 03/31/2013					
Comments: This Work Assignment Change extends the Period of Performance to read:03/31/2013 in accordance with the Period of Performance end date of Option Period I. This amendment is in accordance with CMM 7.3.5.1 (D)										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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Authorized Work Assignment Ceiling										
Contract Period: Cost/Fee: LOE: 04/29/2011 To 03/31/2014										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated: Cost/Fee: LOE:										
Cumulative Approved: Cost/Fee: LOE:										
Work Assignment Manager Name Roy Huntley <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number 919-541-1060 FAX Number: 919-541-0684			
Project Officer Name Karen C. Watson <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 919-541-3114 FAX Number:			
Other Agency Official Name <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: FAX Number:			
Contracting Official Name Rodney-Daryl Jones <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 919-541-3112 FAX Number:			